

1. A method for providing stabilized photonic transmission, the method comprising:
providing a coherent photonic signal of limited coherence length;
providing a modulation waveform;
modulating the coherent photonic signal with the modulation waveform to provide a
5 stabilized photonic output signal having a wavelength that is substantially definable as a function
of time;
providing a wavelength reference;
comparing the wavelength reference with the stabilized photonic output signal to provide
a wavelength error signal; and
10 adjusting the modulation waveform in proportion to the wavelength error signal to correct
wavelength errors in the stabilized photonic output signal.
2. The method of claim 1, further comprising:
providing a data signal, and adjusting the modulation of the coherent photonic signal to
15 encode the data signal into the stabilized photonic output signal.
3. The method of claim 2, wherein the data signal is encoded into the stabilized photonic
output signal using Frequency Shift Keying.
- 20 4. The method of claim 3, wherein the Frequency Shift Keying comprises orthogonal codes.

5. The method of claim 2, wherein the data signal is encoded into the stabilized photonic output signal using ON/OFF Keying.

6. The method of claim 2, wherein the data signal is encoded into the stabilized photonic output signal by pre-modulating the modulation waveform with orthogonal codes.

7. The method of claim 1, further comprising providing a shift signal and producing a wavelength shift between the photonic signal of limited coherence length and the stabilized photonic signal in proportion to the shift signal.

8. The method of claim 7, wherein the shift signal is characterized by a spreading function.

9. The method of claim 7, wherein the shift signal is characterized by a gathering function.

10. The method of claim 7, wherein the shift signal is characterized by the difference of two spreading functions.

11. The method of claim 7, wherein the shift signal comprises a range of allowable wavelength shifting.

12. The method of claim 1, wherein modulating the coherent photonic signal comprises phase modulation.

13. The method of claim 1, wherein modulating the coherent photonic signal comprises quadrature amplitude modulation.

14. The method of claim 1, wherein the modulation waveform is a quadrature waveform comprising first and second waveform components that are substantially 90 degrees out of phase.

15. The method of claim 14, wherein the first and second waveform components are substantially sawtooth in shape.

16. The method of claim 14, wherein the first and second waveform components are substantially triangular in shape.

18. The method of claim 1, wherein the modulation waveform is substantially sawtooth in shape.

19. The method of claim 1, wherein the modulation waveform is substantially triangular in shape.